10

Compression Management Software Architecture

50

Compression Management Service

| CPU Blockers | Compressed Memory Manager |

55 54

Interprocess Communication

60

65

3rd Party Applications

User Mode

Kernel Mode

20

Compressed Memory Device Driver

Memory State Broadcast | I/O Control Interface

26

24

Compressed Memory Statistics

81

75

O/S Kernel Subsystems

| System Service Call Dispatch | Virtual Memory Manager | I/O Manager |

71

Re-routed Memory Manipulation System Calls

Kernel
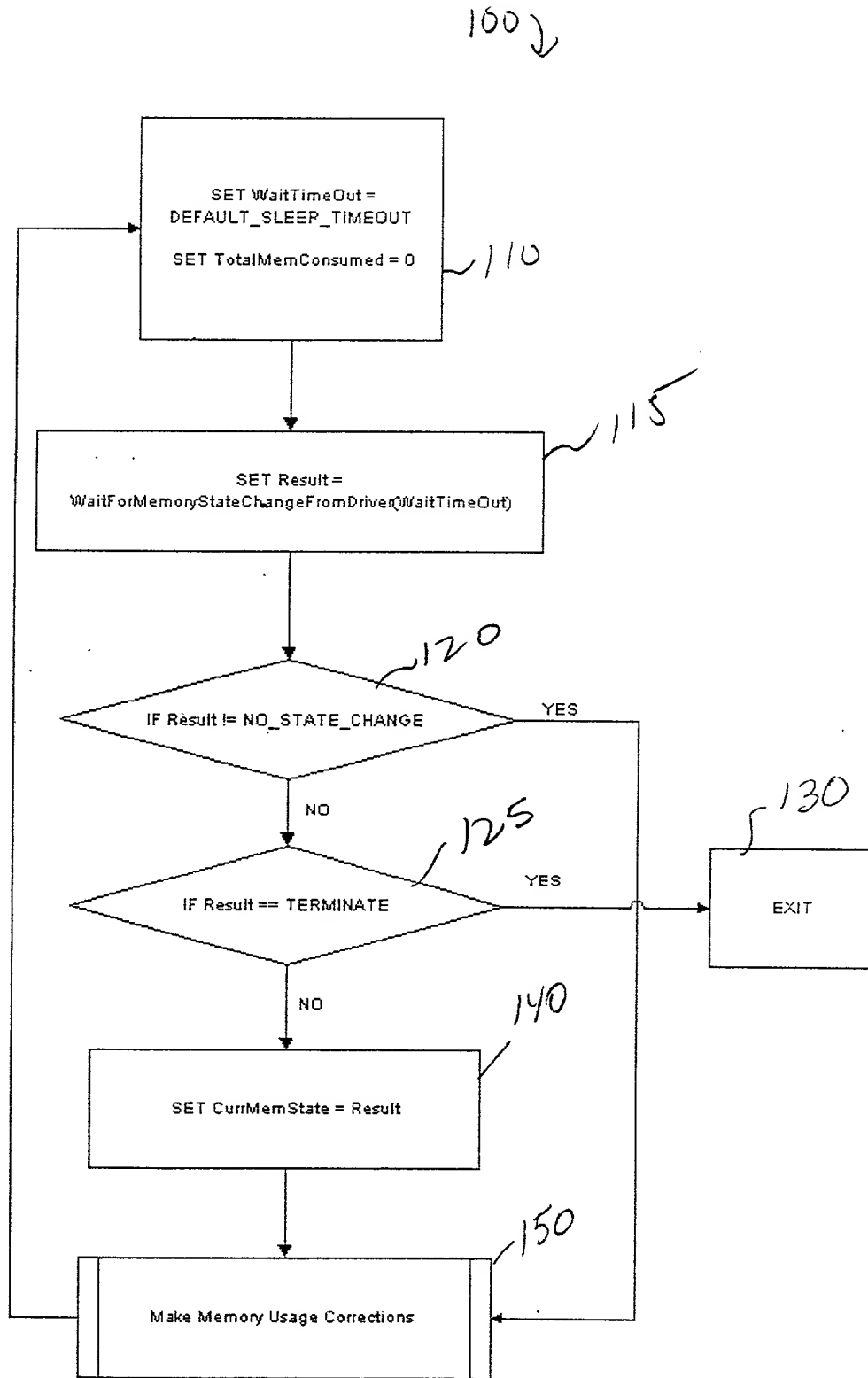
Compressed Memory Controller Hardware

80

Fig 1

Compressed Memoy Management Main Loop

100
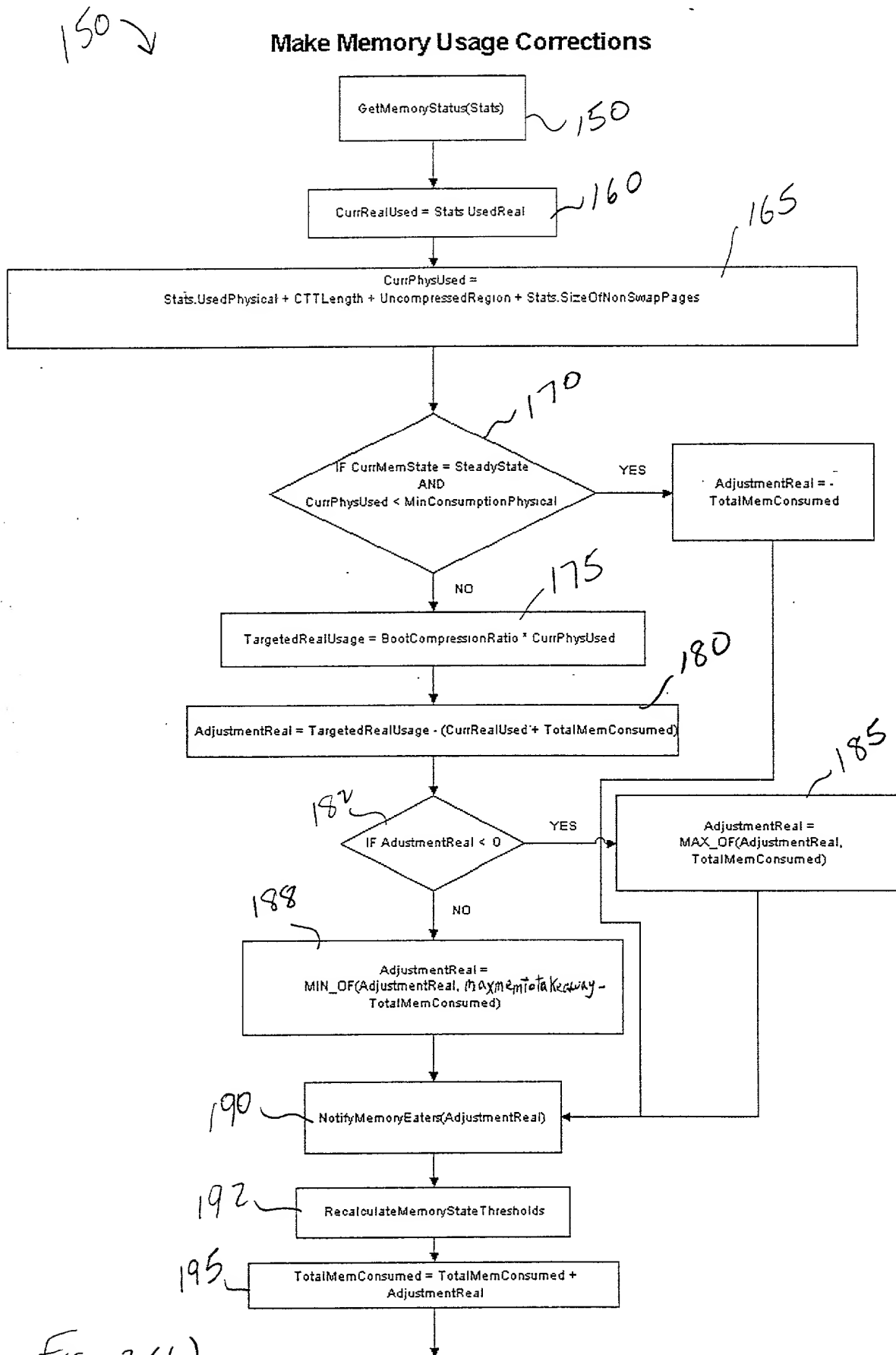
SET WaitTimeOut =
DEFAULT_SLEEP_TIMEOUT

SET TotalMemConsumed = 0   110

115

SET Result =
WaitForMemoryStateChangeFromDriver(WaitTimeOut)

120

IF Result != NO_STATE_CHANGE   YES

NO

125

IF Result == TERMINATE   YES

130

EXIT

NO

140

SET CurrMemState = Result

150

Make Memory Usage Corrections

Fig 2 (a)

Make Memory Usage Corrections

150

GetMemoryStatus(Stats) — 150

↓

CurrRealUsed = Stats.UsedReal — 160

165

↓

CurrPhysUsed =
Stats.UsedPhysical + CTTLength + UncompressedRegion + Stats.SizeOfNonSwapPages

↓

170

IF CurrMemState = SteadyState
AND
CurrPhysUsed < MinConsumptionPhysical

— YES → AdjustmentReal = -
TotalMemConsumed

NO ↓ 175

TargetedRealUsage = BootCompressionRatio * CurrPhysUsed

↓ 180

AdjustmentReal = TargetedRealUsage - (CurrRealUsed + TotalMemConsumed)

↓

182

IF AdjustmentReal < 0 — YES → AdjustmentReal =
MAX_OF(AdjustmentReal,
TotalMemConsumed)   185

NO ↓

188

AdjustmentReal =
MIN_OF(AdjustmentReal, maxmemtotakeaway -
TotalMemConsumed)

↓

190 NotifyMemoryEaters(AdjustmentReal)

↓

192 RecalculateMemoryStateThresholds

↓

195 TotalMemConsumed = TotalMemConsumed +
AdjustmentReal

↓

Fig 2(b)